THE STATUS OF REDBAND RAINBOW TROUT, KOOTENAI DRAINAGE, MONTANA

by

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The rainbow trout is native to the Pacific Northwest, including most of the Columbia River Drainage. The rainbow group is broken down into two strains or varieties, coastal and inland. These two strains are generally not distinguishable phenotypically by the eye or by meristic measurements, but can be differentiated genetically using starch gel electrophoresis. The coastal rainbow trout is native to waters arising west of the Cascade Mountain divide and includes freshwater fish and sea run fish. The inland variety is those rainbow trout native to waters east of the Cascade Mountain divide and includes both freshwater and sea run populations. Sea run inland and coastal rainbow trout are both commonly called steelhead. Freshwater-living inland rainbow trout are, for convenience, broken down into two major stocks, the Kamloops or Girrard strain from Kootenay Lake, British Columbia and the redband rainbow trout.

The Kamloops or Girrard inland rainbow trout appears to be a strain that may be genetically geared to feeding on kokanee and in lakes with abundant kokanee can attain a large (40 pounds) size. Redband rainbow trout are inland rainbow trout found primarily in streams, smaller lakes and in some cases reservoirs. The redband is generally not piscivorous (a fish-eater) even when abundant prey is available and does not grow to sizes comparable to the Kamloops. Genetic analysis can distinguish between inland and coastal rainbow strains but no genetic analytical technique is yet available to differentiate redband trout from Kamloops trout.

Geological history indicates that westslope cutthroat trout invaded the Columbia River System before rainbow trout. Supposedly about 10,000-14,000 years ago rainbow trout invaded the Columbia River and replaced westslope cutthroat trout in most places except some areas upstream of natural barriers. The barrier on the Clark Fork River Drainage in Montana was located on the Pend Oreille River downstream from Lake Pend Oreille near the Washington/Idaho border. The barrier on the Kootenai River was considered the Kootenai Falls near Troy, Montana. Until recently the Yaak Falls on the Yaak River about eight miles upstream from the Yaak River-Kootenai River confluence was also considered the dividing line between native inland rainbow trout and native westslope cutthroat trout habitat.

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Uncertainty Over Native Range of Redband Rainbow Trout

In 1979, rainbow trout from Callahan Creek and South Fork Callahan, a Kootenai River tributary entering below Kootenai Falls, were collected and genetically analyzed. Preliminary analysis of the fish indicated they were inland (redband) rainbow trout, but later reevaluation indicates the possibility that they were a mix of redband and coastal rainbow trout. Acting upon a suggestion by George Holton, retired MDFWP assistant fish division administrator, the next collection was made from Caribou Creek in 1986. Caribou Creek is a small tributary of the East Fork Yaak River and thought to be outside the range of native redband rainbow trout. Genetic analysis of these fish from Caribou Creek showed most were redband rainbow trout while some were redband x westslope cutthroat trout hybrids.

In 1987, fish for genetic analysis were collected from three Yaak River tributaries; one stream, Arbo enters the Yaak River below Yaak Falls while Seventeen Mile and East Fork Yaak River enter above Yaak Falls. Fish from Arbo Creek were a mix of redband and coastal rainbow and westslope cutthroat while fish from Seventeen Mile and East Fork Yaak River were redband rainbow trout and redband x westslope cutthroat trout hybrids. The Seventeen Mile Creek sample described above was collected near the mouth of the creek while another sample of fish taken from the creeks' headwaters was pure westslope cutthroat trout.

The presence of redband (inland) rainbow genetic material in the six samples described above seems to indicate that redband rainbow trout were native to much of the Kootenai River Drainage downstream of Kootenai Falls regardless of other natural barriers. The Kootenai National Forest embarked on an extensive genetics mapping of species distribution in the Yaak River system above Yaak Falls in 1991 and 1992. A report titled, "Genetic Analysis of 45 Trout Populations in the Yaak River Drainage, Montana" by George K. Sage, et. al. (1992) describes all fish population genetic analysis done in the Yaak basin since 1986 and includes samples collected by the U.S. Forest Service, Montana Department of Fish, Wildlife and Parks and B.C. Ministry of the Environment. Briefly this report states:

1. The North Fork and East Fork Yaak River Drainage are essentially pure redband rainbow trout.

2. The West Fork Yaak River Drainage above West Fork Yaak Falls is pure westslope cutthroat trout.

3. The Yaak River Drainage downstream from the West Fork Yaak contains mostly hybridized fish populations containing redband and coastal rainbow trout, westslope cutthroat and in one instance Yellowstone cutthroat trout genetic material.

This report is available from the Wild Trout and Salmon Genetics Laboratory, Division of Biological Science, University of Montana, Missoula, Montana.

The genetic analysis of fish populations in Yaak River tributaries indicates that westslope cutthroat trout and inland rainbow trout were the native trout species of the drainage. Some of the hybridization between the rainbow and westslope, such as found in Seventeen Mile Creek may be a natural occurrence. However, the hybridization of inland rainbow trout with westslope in the East Fork Yaak River Drainage is probably the result of planting Mt. Henry Lake with westslope cutthroat in recent years. Planting of non-native trout in the East Fork Yaak River Drainage (Mt. Henry Lake) was terminated in 1992.

Hybridization of fish in other tributaries of the Yaak River is likely a result of planting hatchery reared rainbow trout and Yellowstone cutthroat into various waters in past years, mostly prior to the early 1960s. All hatchery rainbows planted by MDFWP in the past have had some mixture of coastal rainbow genetic material. At the present time the Department plants only lakes in the Yaak River Drainage and only with pure westslope cutthroat trout. These lakes are: Hawkins Lake in the West Fork Yaak, North Fish Lake and Vinal Lake which are closed basin lakes, Middle and South Fish lakes which are in the Vinal Creek-Turner Creek Drainage and Hoskins Lake. Native fish in the Vinal-Turner creeks is thought to be westslope cutthroat while Hoskins Lake may have a direct connection to main stem Yaak River.

Fish for genetic analysis have not been collected from main stem Yaak River either above or below Yaak Falls.

Genetic analysis of fish from the Yaak River Drainage and Callahan Creek strongly indicate that redband rainbow trout and/or westslope cutthroat trout were the native Oncorhynchus fish species of these systems. Genetic analysis of fish from Star and Ruby creeks, tributaries of Kootenai River downstream from Kootenai Falls indicates both were populated by coastal rainbow trout. Boulder Creek, tributary to Kootenai River in Idaho, contained fish that were hybrids of inland and coastal rainbow trout and westslope cutthroat trout. Girrard or Kamloops inland rainbow from Kootenay Lake do migrate up the Kootenai River to Kootenai Falls and up the Yaak River to Yaak Falls. Kamloops have not been found historically above either barrier.

The headwaters of Callahan Creek, Ruby Creek and Star Creek are within the state of Idaho, while middle and lower reaches are in Montana.

Inland (redband) rainbow trout genetic material has been found in several fish populations upstream from Kootenai Falls in the Kootenai River Drainage. Trout ranging from inland x coastal x westslope hybrids to pure inland rainbow trout were analyzed from Lake Koocanusa prior to Montana and British Columbia planting Lake Koocanusa with Girrard strain inland rainbow trout. It is very likely that the inland genetic material found in Lake Koocanusa fish originated from British Columbia's Kootenay Trout Hatchery in the upper drainage near Wardner, B.C.

Libby and Little Cherry creeks' fish samples included inland x coastal x westslope genes in Libby Creek, while Little Cherry Creek's fish contained only the two types of rainbow genes. The coastal rainbow genes very likely originated from hatchery plants. Westslope cutthroat have

not been recorded as having been planted in Little Cherry Creek. A MDFWP hatchery which contained a pure or nearly pure westslope broodstock was located on Libby Creek and may account for the westslope genetic material in the Libby Creek Drainage. Whether or not inland rainbow trout and/or westslope cutthroat trout were native to the Libby Creek Drainage has not been determined. Fish samples from two streams in the Fisher River Drainage, Barnum Creek and Silver Butte Creek, also contained small amounts of inland rainbow trout genetic material.

Outside of the Kootenai, spawning tributaries of Lake Mary Ronan (Donaldson Creek) and Little Bitterroot Lake (Herrig Creek), were sampled in 1986 and fish were found to contain significant amounts of inland rainbow trout genetic material. Both samples also contained coastal rainbow trout and westslope cutthroat trout genes. It is suspected that both rainbow types and westslope cutthroat genes are the result of fish planting of the last several decades. It is also a possibility that the appearance of both inland and coastal rainbow trout genetic material in the Kootenai could be the result of hatchery plantings in many of the waters described above with fish originating from Lake Mary Ronan or Little Bitterroot Lake as both were used as hatchery egg sources.

Extensive genetic mapping is scheduled for the Kootenai in summer-fall 1994, concentrating on streams and lakes outside the Yaak River Drainage.

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